UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/710,727	07/30/2004	Masuhiro Natsuhara	039.0047	4726

29453 7590 07/22/2008

Judge Patent Associates
Dojima Building, 5th Floor
6-8 Nishitemma 2-Chome, Kita-ku
Osaka-Shi, 530-0047
JAPAN

EXAMINER	
CHANDRA, SATISH	
ART UNIT	PAPER NUMBER
1792	

MAIL DATE	DELIVERY MODE
07/22/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/710,727	NATSUHARA ET AL.	
	Examiner	Art Unit	
	SATISH CHANDRA	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 May 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 July 0204* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/07, 6/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Ushigoe et al (JP 05-009740).

Ushigoe et al discloses:

Regarding claim 1,

A ceramic heater block 1 (Fig 1) comprising a conductive heater (electro conductive element) 4; and two rod-like seamless electrodes 8A and 8B for supplying electricity and directly connected to the heating elements 4 through terminals 5A and 5B wherein electrodes are connected to outside the processing chamber through lead wire 9.

Regarding claim 2, seamless electrodes 8A and 8B (Figs 1, 2, only 8B shown in Fig 2) are enclosed in a tubular pieces 11A and 11B (cylindrical object).

Regarding claims 5 and 6, a semiconductor wafer-heating device comprising a susceptor 2 (wafer heating surface, Fig 8) located in a processing chamber.

Claims 1, 2, 5 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Pollock et al (US 6,082,297).

Pollock et al discloses:

Regarding claim 1,

A ceramic heater block 75 (Fig 4) comprising a conductive heater (electro conductive element) 76; and two seamless electrodes 79 for supplying electricity to the heating elements 76 through terminals wherein electrodes are connected to outside the processing chamber through a cable 80 and end connector 81.

Regarding claim 2, seamless electrodes 79 (Fig 4) are enclosed in a tubular pieces 80 (cylindrical object).

Regarding claims 5 and 6, a semiconductor wafer-heating device comprising a susceptor 74 (wafer heating surface, Fig 4) located in a processing chamber.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3, 4, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ushigoe et al (JP 05-009740) in view of Pollock et al (US 6,082,297).

Ushigoe et al were discussed above.

Ushigoe et al differs from the present invention in that Ushigoe et al does not teach introducing an inert gas into the interior of the tubular piece.

Pollock et al disclose:

Regarding claim 3 and 4, providing an inert gas (conductive gas such as helium) within the encasement (susceptor) 75 (Fig 4) wherein the heater (electro - conductive element) 74 includes an inner resistive element 76 and the electrical lead-out wires (electrodes) 79 connected to the element 76 at one end and extend to the end connector 81 (Column 6, lines 34 –43). The inert gas is supplied to all the elements in the encasement 75 including electrodes.

Regarding claims 7 and 8, a susceptor 75 (Fig 4) is located in a processing chamber.

Therefore it would have been obvious to one of ordinary skill at the time of invention to provide an inert gas in the housing of Ushigoe et al as taught by Pollock et al. It would have obvious to a skilled artisan to combine prior art elements to yield predictable results such as providing an inert gas in the housing of Ushigoe et al as taught by Pollock et al.

The motivation is to prevent oxidation of the heating element and improve thermal conductance as taught by Pollock et al.

Response to Arguments

Applicant's arguments filed 9/18/2007 have been fully considered but they are not persuasive.

Regarding the arguments:

Claim Rejections - 35 U.S.C. § 102

Claims 1, 2, 5 and 6 remain rejected under 35 U.S.C. § 102(b) as being anticipated by Japanese Unexamined Pat. Pub. No. 2005-009740 to Ushigoe et al.

In turn, claims 1, 2, 5 and 6 remain rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Pat. No. 6,082,297 to Pollock et al.

As in Applicant's reply, dated September 18, 2007, to the final action in the previous prosecution, Applicant addresses these separate rejections concurrently.

If electrode seams or joints are present, corrosion and oxidation due to corrosive gases and oxygen arises from those regions, which has been a causative factor behind compromised integrity, and which, as noted in paragraph [0097] of the specification as filed, the present invention overcomes. That is, the present invention, as now clearly recited in claim 1, is possessed of a structure in which, within the processing chamber, there are no seams or joints in the electrodes.

Meanwhile, the Examiner asserts that in Fig. 1 of Ushigoe et al. there are no seams in the electrodes, yet in the detailed view that is Fig. 2, it can be clearly confirmed that the separate parts that are the electrode 8B and the clumplike terminal 5B form a seam within the chamber.

In contrast, claim 1 of the present application now recites semiconductor manufacturing equipment comprising:

a processin,q chamber; a ceramic heater-block installed within said processing chamber; an electroconductive component formed in the interior and/or on

the surface of said ceramic heater-block; and

an electrode connected directly to said electroconductive component for supplying electricity thereto, said electrode having no joints or seams and being defined from where said electrode connects

directly with said electroconductive component, to outside said processing chamber.

Hence, in contradistinction to Ushigoe et al., the present invention as recited in claim 1 requires that the susceptor electrode is connected directly to the electroconductive component in the susceptor's heater block, and that the electrode be seamless from that connection to outside the processing chamber, which is now positively set forth as a component of the claimed invention.

With Fig. 4 of Pollock et al. also, the Examiner alleges, "two seamless electrodes 79 ... are connected to ... end connector 81," yet even granting that the electrodes 79 are seamless, the electrodes 79 with the connector 81 can indeed be thought of as tantamount to seams. In Pollock et al., written details are absent, and drawings in which seams are omitted are numerous, but elsewhere, in Fig. 6, a detailed schematic diagram, the seam between electrode 216 and hermetic electrical feed- through 222 is quite evident, and in detailed-diagram Fig. 8E as well, the connection with leadwire locations 556 is likewise quite plain. With Pollock et al., in respect of the drawings that do not set forth details, a lack of seams is represented, yet if with the aid of the detailed diagrams one takes a closer look at the minute structure, clearly, connections are formed between the electrodes and feed-through, etc., meaning that the structure is one having seams.

In contrast, the present invention as recited in claim 1 stipulates a seamless, joint- less electrode connected directly to a susceptor's electroconductive component, the seamless, joint-less electrode being defined from its connection directly with the electroconductive component to outside said processing chamber, which is an element of the claimed combination.

In the present application, focusing attention on detailed makeup, it was discovered that a seamless structure prevents corrosion and oxidation, whereby it is possible to afford highly dependable electrode structures.

Hence, the prior art of record cannot be said to anticipate each and every element of claim 1. It is respectfully submitted, therefore, that claim 1 should be held allowable, and thus that the other claims rejected under this section of the Office action--claims 2, 5 and 6--should be held allowable as depending from an allowable base claim.

The Examiner disagrees because of the following reasons:

Regarding the Ushigoe et al reference, Ushigoe et al discloses a seamless electrode 8B, which can be seen in Fig 2. The ends of the seamless electrode 8B are directly connected to the heating element 4 via massive terminal 5B (Fig 1). In applicant's claimed invention (Fig 1), the electrode 3 is screwed in the ceramic heater block for supplying current to the electroconductive element 2.

Regarding the Pollock et al reference: Fig 4 shows that electrodes 79 have no joints and are directly connected to the inner resistive elements 76. Therefore we are maintaining our rejection.

Though both the references of Ushigoe et al and Pollock et al are silent about the seamless joints in their apparatuses, it is quite evident from Figs 1 and 2 of Ushigoe et al and Fig 4 of Pollock et al that the electrodes or electric wires are seamless and have no joints. Whatever joints, applicant is referring to are the terminals like the screw-in type connection between the electrode and the electro-conductive element in Fig 1 of the application currently under review.

Regarding the arguments:

Claim Rejections - 35 U.S.C. § 103

Claims 3, 4, 7 and 8: Ushi,qoe et al. '740 in view of Pollock et al. '297

Claims 3, 4, 7 and 8 were rejected as being unpatentable over Ushigoe et al. in view of Pollock et al

Further to Applicant's arguments presented above in addressing the § 102 rejections, Applicant submits that as to some combination of the Ushigoe et al. structure--in the lower part where it is seamless--and the Pollock et al. structure--in the upper part where it is seamless--inasmuch as an intention not to engender any seams whatsoever is in the first place not set forth in either reference, such that absent from either is the thinking that if seams are present corrosion will occur, or of eliminating seams with the aim of enhancing the dependability, it must be concluded that even based on a combination of each reference, the concept of a seamless electrode structure could not be publicly known.

Moreover, is respectfully submitted that for the foregoing reasons presented in addressing the § 102 rejections, the patentability of the present application rests in claim 1 to begin with, and thus in turn rests in the claims rejected under the section of the Office action here addressed--claims 3, 4, 7 and 8--such that the § 103 rejection of these claims is overcome.

As discussed above, though both the references of Ushigoe et al and Pollock et al are silent about the seamless joints in their apparatuses, it is quite evident from Figs 1 and 2 of Ushigoe et al and Fig 4 of Pollock et al that the electrodes or electric wires are seamless and have no joints. Whatever joints, applicant is referring to are the terminals like the screw-in type connection between the electrode and the

electro-conductive element in Fig 1 of the application currently under review.

Therefore we are maintaining our rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Reference JP 2003-086663, US 2001/0019777, US 2003/0066608, 2003/0015516 are considered pertinent as they all show directly connecting electrode to the heating element having no joints.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SATISH CHANDRA whose telephone number is (571)272-3769. The examiner can normally be reached on 8 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeffrie R. Lund/
Primary Examiner, Art Unit 1792

Satish Chandra

Jeffrie R. Lund
Primary Examiner

SC
7/9/2008